



Alpha Magnetic
Spectrometer NASA / DOE

Open Paper Management Tool Open Items Report



National Aeronautics and
Space Administration

Friday, December 02, 2005

Open Paper Management Tool (OPMT) Statistics

Total Action Items:	578	Total Action Items Open:	82
Total Action Items Closed:	496	Action Items Past Due:	63

List of Action Items Past Due:

Action Item Number:	Date Due:	Action Item Number:	Date Due:	Action Item Number:	Date Due:
Action Item 04-046	07/31/2005	Action Item 05-062	09/30/2005	AMS_02-CDR-13	03/31/2005
Action Item 04-051	08/30/2005	Action Item 05-068	10/31/2005	AMS_02-PDS_CDR-06	06/15/2005
Action Item 04-056	08/15/2005	Action Item 05-069	09/30/2005	AMS_02-PDS_CDR-08	05/16/2005
Action Item 04-120	03/31/2005	Action Item 05-070	10/31/2005	AMS_02-PDS_CDR-09-2	05/16/2005
Action Item 05-015	08/15/2005	Action Item 05-075	12/01/2005	AMS_02-Thermal_CDR-03	06/15/2005
Action Item 05-018	10/01/2005	Action Item 05-076	12/01/2005	AMS_02-Thermal_CDR-17	06/15/2005
Action Item 05-020	10/17/2005	Action Item 05-078	12/01/2005	AMS_02-Thermal_CDR-57	06/01/2005
Action Item 05-022	11/21/2005	Action Item 05-079	12/01/2005	AMS_02-Thermal_CDR-60	08/15/2005
Action Item 05-023	10/17/2005	Action Item 05-080	12/01/2005	AMS_02-Thermal_CDR-82	12/01/2005
Action Item 05-024	11/21/2005	Action Item 05-081	12/01/2005	AMS_02-TTCS_PDR-2	07/15/2005
Action Item 05-025	10/17/2005	Action Item 05-082	12/01/2005	AMS_02-TTCS_PDR-3	07/15/2005
Action Item 05-028	10/17/2005	Action Item 05-083	12/01/2005	AMS_02-TTCS_PDR-6	07/15/2005
Action Item 05-044	10/28/2005	Action Item 05-084	12/01/2005	AMS_02-TTCS_PDR-7	07/15/2005
Action Item 05-049	10/31/2005	Action Item 05-085	12/01/2005	AMS_02-TTCS_PDR-8	07/15/2005
Action Item 05-053	09/22/2005	Action Item 05-086	12/01/2005	AMS_02-TTCS_PDR-9	07/15/2005
Action Item 05-054	09/30/2005	Action Item 05-087	12/01/2005	AMS_02-TTCS_PDR-10	07/15/2005
Action Item 05-057	10/31/2005	Action Item 05-089	11/29/2005	AMS_02-TTCS_PDR-11	07/15/2005
Action Item 05-058	10/15/2005	Action Item 05-093	11/25/2005	AMS_02-TTCS_PDR-12	07/15/2005
Action Item 05-059	09/21/2005	AMS_02-CDR-12	03/31/2005	AMS_02-TTCS_PDR-14	07/15/2005

Open Paper Management Tool (OPMT) Statistics

<i>Action Item Number:</i>	<i>Date Due:</i>
<i>AMS_02-TTCS_PDR-19</i>	<i>07/15/2005</i>
<i>AMS_02-TTCS_PDR-20</i>	<i>07/15/2005</i>
<i>AMS_02-TTCS_PDR-23</i>	<i>07/15/2005</i>
<i>AMS_02-TTCS_PDR-25</i>	<i>06/30/2005</i>
<i>AMS_02-TTCS_PDR-26-1</i>	<i>06/15/2005</i>
<i>UPS-CDR-04</i>	<i>08/26/2005</i>

Open Action Items Report

Open Item Number: 04-046

RID Open Date: 8/1/2004

Title:

Intiator(s):

Description:

Action Item Information

Actionee(s): Bill Hungerford/AMS
Trent Martin/EA

Action Due Date: 7/31/2005

Action: Build an integrated logic flow, assembly, and test schedule for the payload at CERN. Include a clear plan for Quality Control and MRB authority. Include iterative electrical/functional testing to ensure adequate operation of hardware/software before access to any given crate or detector is no longer possible.

Action Status: 10/17/2005 - Plan will be released as CR shortly.
8/29/2005 - JSC review in process - document should be ready for collaboration review by 9 Sep.
8/19/2005 - Draft version released for JSC review.
8/15/2005 - Draft version of plan expected by 8/31/2005.
2/09/2005 - We will build an integrated plan at JSC to go through with the AMS Collaboration. The plan will have to be approved by the AMS Collaboration. The plan is to have: (1) NASA representative at CERN for the integration process and (2) NASA provide a quality representative to be at CERN at all time for quality control during integration process.
08/01/04 - Plan due by 09/18/04; Questionnaire sent to detector groups to initiate process. Meeting scheduled at CERN Sept 13 and 14, chaired by Giuliano Laurenti, to consolidate and refine inputs from various detector and sub-system groups. Should result in development of preliminary schedule for review at October TIM

Open Action Items Report

Open Item Number: 04-051

RID Open Date: 8/1/2004

Title:

Intiator(s):

Description:

Action Item Information

Actionee(s): OZ/Bob Miley

Action Due Date: 8/30/2005

Action: Complete and sign AMS PIA.

Action Status: 11/14/2005 - New text for SSRMS section to be provided by Tim Urban by 12/8.
10/17/2005 - All issues resolved except SSRMS power/current requirements. Draft text under review by CGS.
8/26/2005 - Based on agreement with Hartman, OZ will attempt to sign PIA prior to October TIM. OZ FY2006 AMS funding under review.
8/8/2005 - Hartman meeting moved to 8/26. PIA CR release moved to 9/9. PIA signataure still scheduled for 12/1.
8/3/2005 - Hartman meeting moved to 8/19. PIA CR scheduled to be released 8/30. PIA scheduled to be signed 12/1.
5/25/2005 - Meeting scheduled with Dan Hartman on 7/13 to resolve all final issues, PIA scheduled to be signed on 8/30. Specific TBDs being transferred into new OPMT items 05-010, 05-011, and 05-012.
3/02/2005 - It will be three weeks before it is known the amount of power to be provided. It will not be 3kW. Win Reid/OZ to set up meeting with Chris Tutt, Trent Martin, Craig Clark, John Cornwell, and Henry Hoang. Due date for this action item was changed to June 30, 2005.
02/09/2005 - ISS ICD – turning in PIA baselined first. Plan to remove the TBRs. Win Reid to check on the actions on the ISS side.
12/10/2004 - ISS ICD to be released 02/05; question how to get into official documentation.

Open Action Items Report

Open Item Number: 04-056

RID Open Date: 8/1/2004

Title:

Intiator(s):

Description:

Action Item Information

Actionee(s): Chris Tutt/ESCG
Bill Hungerford/AMS
Paul Nemeth/ESCG

Action Due Date: 8/15/2005

Action: *Provide the plan for Surveillance of Safety Critical assembly and test steps of Collaboration Hardware.*

Action Status: 8/15/2005 - Initial surveillance request due out by 8/30/2005.
8/3/2005 - Chris Tutt to review current schedule and SVMs and send out verification requests to relevant parties. MVP still in work, so Surveillance Plan on hold.
2/9/2005 - Mike Fohey and David Kaplan to discuss the MVP schedule. The MVP is a deliverable on the ESCG contract and is to be delivered no later than 8 months from February 1, 2005.

Open Action Items Report

Open Item Number: 04-120

RID Open Date: 12/6/2004

Title:

Intiator(s):

Description:

Action Item Information

Actionee(s): Leland Hill/ESCG

Action Due Date: 3/31/2005

Action: *Work with all AMS experimenters to close out all open issues associated with the Phase II Flight Safety Review Safety Data Package.*

Action Status: 8/29/2005 - Release date now presumed to be 9/9. All comments still to be incorporated by 9/30.
8/15/2005 -Draft versions of the writeup due by 8/31, full JSC review and all comments incorporated by 9/30.
8/8/2005 - Trent Martin to send updated list of final items to various group leads.
8/3/2005 - Many issues resolved, but cryomagnet and TTCS still have major open items.
6/29/2005 - Letter has been distributed to the collaboration.
5/25/2005 - Letter describing all open actions has been prepared and forwarded to Prof. Ting.
4/27/2005 - New set of actions in work. Some actions have been answered. Addressing specific organizations/individuals that have not responded. Safety package should be ready by the end of June to distribute to the collaboration approximately two weeks before the July TIM. Responses from the collaboration will be due prior to or during the TIM. The safety package will be updated and redistributed to the collaboration after the TIM. Trent Martin/EA2 requested to see a status of action items at each CCB/Tag-up meeting. Per Trent Martin/EA2, hold firm to the May 31st due date for new list of action items.
1/19/05 - Some data has been received since the October TIM and January TIM; Some data not due until March 2005; Due date was changed from 1/31/05 to 3/31/05; Final Safety Data Package due 03/08/05.

Open Action Items Report

Open Item Number: 05-015

RID Open Date: 8/3/2005

Title: MLI Specification

Intiator(s): Trent Martin/EA

Description: AMS-02 MLI Specification needed.

Action Item Information

Actionee(s): John Cornwell/EC

Action Due Date: 8/15/2005

Action: Develop AMS-02 MLI specification. Upon release of specification, CGS to revise MLI weight estimates and update mass budget accordingly.

Action Status: 11/28/2005 - Most issues resolved except Boeing PEI concerns. Evelyne Orndoff and John Cornwell to coordinate with ISS and resolve remaining issues.
10/17/2005 - MLI spec released as CR, under review by multiple parties. ISS has concerns about blanket lifetime. On weight issue, NASA will be building samples and will weigh them at various assembly stages to get good estimate. These will be presented at the October TIM.
8/28/2005 - Draft specification released 8/25, under review at JSC.
8/22/2005 - Trent Martin to contact Chen Lin and determine new release date for draft specification. Second part of action added with Marco Molina/CGS identified as actionee.
8/15/2005 - John Cornwell plans to release draft specification by COB today for JSC review. Review comments incorporated and out for Collaboration review by 8/23. Specification will be formally released through CCB as a CR.

Open Action Items Report

Open Item Number: 05-018

RID Open Date: 8/22/2005

Title: Thermal Testing Requirements

Intiator(s): Tim Urban

Description: UPS worst case hot temperature including magnet charging needs to be included in thermal ICD and thermal test plans.

Action Item Information

Actionee(s): Tim Urban

Action Due Date: 10/1/2005

Action: Upon completion of 05-017, update CSIST SOW to ensure that thermal testing done to appropriate temperature levels.

Action Status: 11/14/2005 - Updated SOW released for review - awaiting comments from Judith Jeevarajan/EP.

Open Action Items Report

Open Item Number: 05-020

RID Open Date: 9/13/2005

Title: Cryocooler Finger Deflection Analysis

Intiator(s):

Description: Provide copies of the Cryocooler cold finger deflection analysis to ESCG for review.

Action Item Information

Actionee(s): Stephen Harrison/SCL

Action Due Date: 10/17/2005

Action: Provide copies of the Cryocooler cold finger deflection analysis to ESCG for review.

Action Status:

Open Action Items Report

Open Item Number: 05-021

RID Open Date: 9/13/2005

Title: MLI Performance under Welding Heat Loads

Intiator(s):

Description: Determine whether magnet MLI will survive thermal loads from welding operations without significant damage.

Action Item Information

Actionee(s): Phil Mott/ESCG, Stephen Harrison/SCL

Action Due Date: 12/11/2005

Action: Determine what size MLI sample could be inserted into the STA easily underneath the weld area using scrap MLI already available at SCL.

Action Status: 11/14/2005 - Date changed to 12/11 to better reflect reality.
11/10/2005 - On hold pending results of weld testing at STADCO.

Open Action Items Report

Open Item Number: 05-022

RID Open Date: 9/13/2005

Title: Cryosystem Component Testing

Initiator(s):

Description: Demonstrate how cryosystem components will be validated with a non-cryogenic STA.

Action Item Information

Actionee(s): Chris Tutt/ESCG, Stephen Harrison/SCL, Phil Mott/ESCG

Action Due Date: 11/21/2005

Action: Develop plan for validating all cryosystem components, either through component level testing or analysis.

Action Status:

Open Action Items Report

Open Item Number: 05-023

RID Open Date: 9/13/2005

Title: STA Gate Valve

Intiator(s):

Description: APO will provide the gate valve for the STA article using a single-seal off-the-shelf valve.

Action Item Information

Actionee(s): Phil Mott/ESCG

Action Due Date: 10/17/2005

Action: Procure requested gate valve and provide to SCL for integration onto the STA VC.

Action Status: 11/10/2005 - Gate valve will be provided to SCL instead of to building 10.

Open Action Items Report

Open Item Number: 05-024

RID Open Date: 9/13/2005

Title: Flight Unit Gate Valve

Initiator(s):

Description: Flight VC requires gate valve with double-seals.

Action Item Information

Actionee(s): Phil Mott/ESCG, Stephen Harrison/SCL

Action Due Date: 11/21/2005

Action: Design modified gate valve incorporating double O-ring seals and provide to SCL for installation onto the flight unit.

Action Status:

Open Action Items Report

Open Item Number: 05-025

RID Open Date: 9/13/2005

Title: STA Parts List

Initiator(s):

Description: Develop a parts list for the full STA VC.

Action Item Information

Actionee(s): Stephen Harrison/SCL

Action Due Date: 10/17/2005

Action: Provide copies of the STA design drawings and Bill of Materials to ESCG in order to pull them into a complete Parts List.

Action Status:

Open Action Items Report

Open Item Number: 05-028

RID Open Date: 9/13/2005

Title: Russian Funding Issues

Intiator(s):

Description: Provide necessary data to allow remainder of Russian burst disk/strap funding to be released.

Action Item Information

Actionee(s): Stephen Harrison/SCL

Action Due Date: 10/17/2005

Action: Determine what information is currently available to address Russian concerns about strap development and provide to Prof. Hans Hofer/ETH.

Action Status: 11/14/2005 - Strap order on hold - meeting at CERN this week to try and resolve issue.
11/4/2005 - Information provided. Russian funding issues will be tracked by the MWG.

Open Action Items Report

Open Item Number: 05-039

RID Open Date: 9/13/2005

Title: Total Mass Capability of USS-02

Initiator(s):

Description: Determine total mass capability of USS-02

Action Item Information

Actionee(s): Chris Tutt/ESCG, Bruce Sommer/ESCG

Action Due Date: 1/3/2006

Action: Review structural analysis of AMS-02 and develop first-order estimate for how much additional mass can be carried without modifying the existing structure.

Action Status: 11/14/2005 - Models being updated now. Analysis will be run by end of the year and ESCG will provide the collaboration with a summary and recommendations. Date changed to 1/3 to better reflect work schedules.

Open Action Items Report

Open Item Number: 05-042

RID Open Date: 9/14/2005

Title: Helium Venting Hazard Analysis

Initiator(s):

Description: Provide hazard analysis for venting of helium from the main tank.

Action Item Information

Actionee(s): Chris Tutt/ESCG

Action Due Date: 3/1/2006

Action: Take existing hazard analysis of helium venting presented to NASA and create stand-alone report for delivery to ESTEC.

Action Status: 11/14/2006 - Date changed to 3/1 to better reflect analyst workloads.

Open Action Items Report

Open Item Number: 05-043

RID Open Date: 9/14/2005

Title: Helium Venting Hazard Analysis

Intiator(s):

Description: Provide hazard analysis for venting of helium from the main tank.

Action Item Information

Actionee(s): Gaetan Piret/ESTEC

Action Due Date: 4/1/2006

Action: Upon delivery of hazard analysis described in 05-042, evaluate potential hazards to EMI and TV test chambers.

Action Status: 11/12/2006 - Date changed to 4/1/2006 to match item 05-042.

Open Action Items Report

Open Item Number: 05-044

RID Open Date: 9/14/2005

Title: Burst Disk Vent Lines

Intiator(s):

Description: Attaching a vent line to the burst disk vent location would simplify test setup.

Action Item Information

Actionee(s): Phil Mott/ESCG

Action Due Date: 10/28/2005

Action: Evaluate feasibility of attaching a vent line at the main tank burst disk vent location.

Action Status: 11/4/2005 - Simple diverter may be more feasible than a fill vent line. SCL to provide exact venting locations, expected volumes, and plume temperatures to JS. JS to review and develop preliminary design.

Open Action Items Report

Open Item Number: 05-046

RID Open Date: 9/14/2005

Title: Thermal Math Model Compatibility

Initiator(s):

Description: LSS and AMS thermal models must be brought into a compatible software package in order to do pre-test analysis.

Action Item Information

Actionee(s): Gaetan Piret/ESTEC

Action Due Date: 1/3/2006

Action: ESTEC to determine the most cost-effective method for converting the LSS model into a SINDA compatible format.

Action Status: 10/17/2005 - ESTEC will convert the model themselves and provide test cases to CGS by the end of the year.

Open Action Items Report

Open Item Number: 05-048

RID Open Date: 9/14/2005

Title: LSS Vacuum Gages

Initiator(s):

Description: Determine whether LSS vacuum gages will function within the AMS-02 magnetic field.

Action Item Information

Actionee(s): Gaetan Piret/ESTEC

Action Due Date: 11/30/2005

Action: Determine whether LSS vacuum gages will function within the AMS-02 magnetic field.

Action Status:

Open Action Items Report

Open Item Number: 05-049

RID Open Date: 9/16/2005

Title: *Supercritical Startup*

Initiator(s):

Description: *Determine whether or not the TTCS pumps can be started with vapor in the pump.*

Action Item Information

Actionee(s): *Johannes Van Es/NLR*

Action Due Date: *10/31/2005*

Action: *Perform test to determine performance of the pump while pumping vapor, including expected bearing life and pressure head.*

Action Status: *11/14/2005 - Second test has been defined to address some concerns with first test data. Initial results look very promising. Results due on 11/21.
11/10/2005 - Test complete - results expected soon.*

Open Action Items Report

Open Item Number: 05-053

RID Open Date: 9/16/2005

Title: CO2 Levels

Intiator(s):

Description: TTCS requires an adequate CO2 charge prior to launch.

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 9/22/2005

Action: Assess whether TTCS systems should be refilled prior to launch.

Action Status: 11/14/2005 - Gamma ray inspection seems possible - details still being worked out.

11/10/2005 - UT inspection not possible - gamma ray and x-ray inspection techniques being reviewed.

Filling options look very unlikely based on access issues.

9/23/2005 - CAST investigating whether or not accumulator volume can be inspected ultrasonically.

Open Action Items Report

Open Item Number: 05-054

RID Open Date: 9/16/2005

Title: Leak Before Burst Analysis

Intiator(s):

Description: Determine whether current condensor tube design is acceptable to NASA safety community.

Action Item Information

Actionee(s): Chris Tutt/ESCG

Action Due Date: 9/30/2005

Action: Obtain written concurrence from Glenn Ecord and Bill Manha that existing condensor tube and magnetic flange design and verification plan are acceptable.

Action Status: 11/14/2005 - Chris Tutt to arrange meeting prior to TWG meeting in Milano.
11/10/2005 - Magnetic flange added to list.

Open Action Items Report

Open Item Number: 05-057

RID Open Date: 9/16/2005

Title: Two-Phase Modelling

Intiator(s):

Description: Provide details on specific two-phase modelling assumptions used in TTCS analysis.

Action Item Information

Actionee(s): Aswin Pauw/NLR

Action Due Date: 10/31/2005

Action: Provide description of two-phase modelling assumptions used to NASA for review.

Action Status: 11/10/2005 - SYSU has developed description. Johannes Van Es to forward to Craig Clark for review.

Open Action Items Report

Open Item Number: 05-058

RID Open Date: 9/16/2005

Title: Two-Phase Flow

Intiator(s):

Description: Evaluate split of two-phase flow exiting the heat exchanger

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 10/15/2005

Action: Review analysis of two-phase flow of CO2 exiting heat exchanger and ensure that assumptions made for dividing the flow between the two loops were appropriate.

Action Status: 11/16/2005 - NLR has made design modification to the heat exchanger exit tubing to address the concern. New design under review by John Cornwell and Gene Ungar.

Open Action Items Report

Open Item Number: 05-059

RID Open Date: 9/16/2005

Title: Two-Phase Flow Paper

Intiator(s):

Description: Provide paper on two phase flow in small diameter tubes and geometric vapor flow blocker

Action Item Information

Actionee(s): John Cornwell/NASA, Gene Ungar/NASA

Action Due Date: 9/21/2005

Action: Provide paper to NLR.

Action Status: 10/17/2005 - Per John Cornwell, paper will be delivered soon.

Open Action Items Report

Open Item Number: 05-060

RID Open Date: 9/16/2005

Title: ID Tolerances

Intiator(s):

Description: Assess the effect of inner diameter manufacturing tolerances on pressure drop and thawing MDP in condenser tubes.

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 1/3/2006

Action: Assess the effect of inner diameter manufacturing tolerances on pressure drop and thawing MDP in condenser tubes.

Action Status: 11/14/2005 - Date changed to 1/3 to better reflect analyst workloads.
11/10/2005 - ECD for analysis now 11/11.

Open Action Items Report

Open Item Number: 05-062

RID Open Date: 9/16/2005

Title: *TTCB Integration*

Intiator(s):

Description: *Assess TTCB integration procedures against SCL Warm Valve Box and TRD Gas Supply Lower Bracket.*

Action Item Information

Actionee(s): *Corrado Gargiulo/INFN, Stephen Harrison/SCL*

Action Due Date: 9/30/2005

Action: *Assess TTCB integration procedures against SCL Warm Valve Box and TRD Gas Supply Lower Bracket.*

Action Status: *11/14/2005 - SCL still assessing PVVV location. Once position is chosen, JS to review for hardware interferences.*

11/10/2005 - No interference issues between TTCB and TRD. Corrado Gargiulo still working with SCL to determine if there are any interferences with magnet hardware.

Open Action Items Report

Open Item Number: 05-065

RID Open Date: 9/16/2005

Title: TTCS Tube Routing

Intiator(s):

Description: Determine routing locations for TTCS tubes.

Action Item Information

Actionee(s): Antonio Alvino/INFN, Gerrit Van Donk/NLR

Action Due Date: 1/1/2006

Action: Upon completion of 05-064, develop detailed TTCS tubing design.

Action Status: 11/14/2005 - Bracket thermal analysis complete, ECD for structural analysis is 1/1/2006.

Open Action Items Report

Open Item Number: 05-067

RID Open Date: 9/16/2005

Title: TTCS Tube Relative Displacements

Intiator(s):

Description: Provide relative displacements for TTCS tube routing areas.

Action Item Information

Actionee(s): Bruce Sommer/ESCG

Action Due Date: 1/15/2006

Action: Provide relative displacements for TTCS tube routing areas.

Action Status: 11/14/2005 - Due date changed to 1/15 to better reflect analyst workloads.

Open Action Items Report

Open Item Number: 05-068

RID Open Date: 9/16/2005

Title: Tracker Radiator Integration Jig

Intiator(s):

Description: Provide design for Tracker Raditor Integration Jig.

Action Item Information

Actionee(s): Zhenhui He/SYSU

Action Due Date: 10/31/2005

Action: Provide design for Tracker Raditor Integration Jig.

Action Status:

Open Action Items Report

Open Item Number: 05-069

RID Open Date: 9/16/2005

Title: Thermal Tubing Support Beam

Intiator(s):

Description: Thermal Tubing Support Beam needs to be assessed for possible interferences with other hardware.

Action Item Information

Actionee(s): Stephen Harrison/SCL

Action Due Date: 9/30/2005

Action: Assess support beam violations into magnet Keep Out Zone.

Action Status: 11/14/2005 - Date changed to 1/3/2006 to match item 05-062.

Open Action Items Report

Open Item Number: 05-070

RID Open Date: 9/16/2005

Title: Thermal Tubing Support Beam Mass

Intiator(s):

Description: Mass of Thermal Support Beam needs to be calculated and tracked.

Action Item Information

Actionee(s): Robert Becker/MIT

Action Due Date: 10/31/2005

Action: Estimate total weight of support beam and a reasonable division of the total mass between the Cryocooler and TTCS mass budgets.

Action Status: 11/14/2005 - Johannes Van Es/NLR has completed initial estimate - still to be confirmed with Robert Becker/MIT.
11/4/2005 - Robert Becker/MIT provided estimate based on Al construction, but is still to provide updated mass based on CFRP construction.

Open Action Items Report

Open Item Number: 05-072

RID Open Date: 10/28/2005

Title: Cryogenic GSE safety information

Intiator(s): Trent Martin

Description: ESCG needs to begin work on the Phase II Ground Safety Package

Action Item Information

Actionee(s): Alexander Gretchko/MIT

Action Due Date: 1/1/2006

Action: MIT to provide details of each piece of cryogenic ground safety equipment that will be used at KSC to Art Nelson/ESCG to allow development of the Phase II Ground Safety Package. Data required includes power usage, intended usage location (on pad, in SSPF, etc.), maximum design pressure of pressurized tanks, lines, and fittings, helium venting rates and vent locations, and any special requirements.

Action Status:

Open Action Items Report

Open Item Number: 05-073

RID Open Date: 10/28/2005

Title: Helium Diverter Design

Intiator(s): Trent Martin

Description: Multiple test sites need details on how helium venting will be controlled for worker safety.

Action Item Information

Actionee(s): Stephen Harrison/SCL

Action Due Date: 1/1/2006

Action: SCL to provide details on which port locations could potentially vent helium gas, including for each port details on vent rate, maximum gas volume, and plume temperature. This shall allow development of safety packages and design of an appropriate diverter.

Action Status:

Open Action Items Report

Open Item Number: 05-074

RID Open Date: 10/28/2005

Title: CGSE Support at Pad

Intiator(s): Trent Martin

Description: It is not clear how the cryogenic GSE, particularly the piping, will be supported at the pad.

Action Item Information

Actionee(s): Robert Becker/MIT, Alexander Gretchko/MIT

Action Due Date: 1/1/2006

Action: Provide details on how the GSE will be supported at the pad.

Action Status:

Open Action Items Report

Open Item Number: 05-075

RID Open Date: 10/28/2005

Title: Using magnet at ESTEC

Intiator(s): Trent Martin

Description: Using the magnet at ESTEC may be a problem due to the steel in the thermal vac chamber.

Action Item Information

Actionee(s): John Cornwell/EC, Craig Clark/ESCG, Marco Molina/CGS

Action Due Date: 12/1/2005

Action: Determine whether magnet should be operated during thermal vacuum test and provide assessment of how presence of steel will affect the outcome.

Action Status: 11/10/2005 - Joe Burger to contact ESTEC to determine all iron which is present in the chamber.

Open Action Items Report

Open Item Number: 05-076

RID Open Date: 10/28/2005

Title: GSE layouts

Intiator(s): Trent Martin

Description: Need layouts of the cryogenic GSE to support various test planning efforts.

Action Item Information

Actionee(s): Alexander Gretchko/MIT

Action Due Date: 12/1/2005

Action: MIT to provide lists of required GSE and layouts to support 1) all operations, 2) just a pump-down from 4.2K to 1.8K, 3) steady-state system maintenance.

Action Status:

Open Action Items Report

Open Item Number: 05-078

RID Open Date: 10/28/2005

Title: MRC Valves

Intiator(s): Trent Martin

Description: MWG needs to review MRC valves as possible replacement for WEKA valves.

Action Item Information

Actionee(s): Trent Martin/EA2, Stephen Harrison/SCL

Action Due Date: 12/1/2005

Action: Review prices of MRC valves and develop a recommendation to the Magnet Working Group for their usage in the cryomagnet.

Action Status: 11/10/2005 - Valve pricing data available, total number of valves needs to be reviewed in light of weight issues.

Open Action Items Report

Open Item Number: 05-079

RID Open Date: 10/28/2005

Title: Magnet Endurance Calculations

Intiator(s): Trent Martin

Description: MWG needs to review various Vapor Cooled Shield options for potential weight savings.

Action Item Information

Actionee(s): Stephen Harrison/SCL

Action Due Date: 12/1/2005

Action: Redo endurance calculations for these configurations: 1) 4 cryocoolers running at 100W, 4 shields present; 2) 4 cryocoolers running at 150W, 3 shields present; 3) 4 cryocoolers running at 100W, 3 shields present.

Action Status: 11/10/2005 - Calculations complete and under review by the MWG. SCL to review what hardware might be attached to the VCS2 support and would have to be relocated.

Open Action Items Report

Open Item Number: 05-080

RID Open Date: 10/28/2005

Title: Pilot Valve Vacuum Vessel Installation

Intiator(s): Trent Martin

Description: Final location of Pilot Valve Vacuum Vessel needs to be chosen.

Action Item Information

Actionee(s): Stephen Harrison/SCL, Phil Mott/ESCG

Action Due Date: 12/1/2005

Action: SCL to provide CAD model of PVVV to Phil Mott for inclusion in the overall AMS-02 CAD model. JS will then propose an attachment location on one of the VC support rings and perform a preliminary clearance assessment.

Action Status:

Open Action Items Report

Open Item Number: 05-081

RID Open Date: 10/28/2005

Title: Charged Magnet during Beam Testing

Intiator(s): Trent Martin

Description: The magnet should not realign itself out of the VC during beam testing.

Action Item Information

Actionee(s): Robert Becker/MIT

Action Due Date: 12/1/2005

Action: Robert Becker to provide CAD model of test beam in CERN building 867 clearly identifying all ferrous metals in the area so that a loads assessment can be done on the magnet.

Action Status:

Open Action Items Report

Open Item Number: 05-082

RID Open Date: 10/28/2005

Title: Review Warm Valve Redundancy Requirements

Intiator(s): Trent Martin

Description: The number of warm valves should be reviewed for possible reduction for weight savings.

Action Item Information

Actionee(s): Stephen Harrison/SCL

Action Due Date: 12/1/2005

Action: SCL will review the warm valve schematic and the criticality of the various cryogenic valve operations and then provide a recommendation on how many valves could be removed to save weight without significantly jeopardizing mission success. At the same time, CRISA will review the potential weight savings within the CAB associated with removal of valves.

Action Status:

Open Action Items Report

Open Item Number: 05-083

RID Open Date: 10/28/2005

Title: Removal of CAB Modules

Intiator(s): Trent Martin

Description: MWG needs to assess whether removal of several CAB modules is an appropriate weight savings.

Action Item Information

Actionee(s): Guillermo Munoz/CRISA

Action Due Date: 12/1/2005

Action: Assess risk of removing the PTM, STM, and Power Switch module from the CAB and make a recommendation to the MWG.

Action Status:

Open Action Items Report

Open Item Number: 05-084

RID Open Date: 10/28/2005

Title: Removal of DDCUs for Weight Savings

Intiator(s): Trent Martin

Description: MWG needs to consider removing DDCUs within the CAB to reduce overall weight

Action Item Information

Actionee(s): Guillermo Munoz/CRISA

Action Due Date: 12/1/2005

Action: CRISA to review potential mission success risks associated with removal of a DDCU from the CAB and provide a recommendation to the MWG.

Action Status:

Open Action Items Report

Open Item Number: 05-085

RID Open Date: 10/28/2005

Title: Reduce Power Supply Redundancy

Intiator(s): Trent Martin

Description: The MWG needs to assess whether removal of the backup power supplies is an acceptable risk to support weight savings.

Action Item Information

Actionee(s): Guillermo Munoz/CRISA

Action Due Date: 12/1/2005

Action: CRISA to review the additional risk to mission success by removal of one Uninterruptable Power Supply and one Power Drive module and make a recommendation to the MWG.

Action Status:

Open Action Items Report

Open Item Number: 05-086

RID Open Date: 10/28/2005

Title: Removal of Quench Detection and Recovery System

Initiator(s): Trent Martin

Description:

Action Item Information

Actionee(s): Stephen Harrison/SCL

Action Due Date: 12/1/2005

Action: SCL to review risks associated with removal of the quench detection system and provide a recommendation to the MWG.

Action Status:

Open Action Items Report

Open Item Number: 05-087

RID Open Date:

Title: Review Launch Helium Weight

Intiator(s): Trent Martin

Description:

Action Item Information

Actionee(s): Stephen Harrison/SCL

Action Due Date: 12/1/2005

Action: Review helium filling procedures for KSC Operations and provide realistic estimate for how much helium can be actually loaded into AMS-02.

Action Status:

Open Action Items Report

Open Item Number: 05-089

RID Open Date: 10/26/2005

Title: CAB/TCS Interfaces

Intiator(s): Craig Clark

Description: Interfaces between the CAB and the TCS need to be fully defined.

Action Item Information

Actionee(s): Guillermo Munoz/CRISA

Action Due Date: 11/29/2005

Action: Upon completion of item 05-088, CRISA will evaluate the requirements and make a recommendation of what design changes will be required to accommodate them.

Action Status: 11/28/2005 - Preliminary plan provided to CGS, detailed plan in work.

Open Action Items Report

Open Item Number: 05-093

RID Open Date: 10/26/2005

Title: CAB Component Limits

Intiator(s): Craig Clark

Description: Need better understanding of impacts associated with exceeding max rated limits.

Action Item Information

Actionee(s): Guillermo Munoz/CRISA

Action Due Date: 11/25/2005

Action: CRISA will talk to component manufacturers to see if rated values can be used instead of derated values when temperature limits are only violated for a brief period.

Action Status:

Open Action Items Report

Open Item Number: 05-095

RID Open Date: 10/28/2005

Title: Silver Teflon Usage

Intiator(s): Craig Clark

Description: Use of additional silver teflon needs to be coordinated with ISS.

Action Item Information

Actionee(s): Craig Clark/ESCG

Action Due Date: 12/9/2005

Action: Craig Clark/ESCG to check with ISS concerning replacement of MLI by silver teflon in several areas of the USS-02.

Action Status:

Open Action Items Report

Open Item Number: AMS_02-CDR-06

RID Open Date: 5/1/2003

Title: AMS-CDR-1-17: Meteoroid/Orbital Debris Shielding

Intiator(s): E. Christiansen/NASA

Description: *Shielding from meteoroid/debris impact is inadequate to meet protection requirements. Shielding of pressurized vessels on AMS-02 such as the vacuum case and TRD (as well as any other pressure vessel) is required to prevent catastrophic rupture of these tanks in the event of meteoroid/debris impact which would release high-velocity fragments creating a potentially serious safety issue for on-board crew. The assessed probability of no penetration (PNP) using specified environment models is 0.97 which is far below the specified 0.997 PNP requirement. Updating ballistic limit equations and models as described in the forward work plan does not appear adequate to show compliance with requirements. Additional or significantly enhanced shielding will likely be necessary to meet safety requirements.*

Action Item Information

Actionee(s): Dana Lear/ESCG

Action Due Date: 7/1/2006

Action: *Complete analysis and coordinate design of debris shields. To be completed by Phase III Safety.*

Action Status: *05/03/05 - Email from Dana Lear/ESCG to Phil Mott/ESCG, Ross Harold/ESCG, and Trent Martin/EA2. The AMS-02 modeling for the MMOD assessment was completed last week. Additionally, the BUMPER geometry runs have been completed. Since the input scripts have not been run in years, I'm going through and verifying/updating all inputs for both the shield ballistic response definitions (BLEs) and the mission parameters.*
02/09/05 - Chris Tutt/ESCG sent an email to Dana Lear/ESCG requesting a letter from Eric Christiansen/KX with the requirements and his signature.
01/19/05 - L. Hill/LMSO to get in touch with D. Lear/LMSO to discuss what L. Hill/LMSO needs for Phase II. C. Tutt/LMSO, P. Mott/LMSO, & R. Harold/LMSO need to be involved. T. Martin/EA stated that anything pressure safety critical needs to be covered.

Open Action Items Report

Open Item Number: AMS_02-CDR-08

RID Open Date: 5/1/2003

Title: Shear Analysis of Items in Enlarged Holes

Intiator(s): B. Ritter/GSFC

Description: Bolts attaching the support ring to the conical flange were assumed to transfer shear, even though they are in sloppy holes this is non-conservative.

Action Item Information

Actionee(s): Chris Tutt/ESCG

Action Due Date: 1/3/2006

Action: Work with SWG to resolve concerns with compliance with NASA-STD-08307, including bolts in sloppy holes being assumed to take shear.

Action Status: 11/14/2005 - Date changed to better match analyst workloads.
8/15/2005 - Analysis currently low priority. Bruce Sommer to review analyst workloads and estimate completion date.
7/22/2005 - Initial VC flange loads obtained with latest model. These loads will be used in the updated analysis.
6/17/2005 - SWG agrees that 08307 will only apply to safety critical fasteners.
5/11/2005 - Resolution plan under development. Proposal complete but needs to be written up and approved by Structures Working Group (SWG).
2/9/2005 - Action item due date was changed to May 31, 2005. Bolt analysis was done to Lockheed Martin standards. Structures Working Group (SWG) has new standards. Currently looking to see how many interfaces have issues and what needs to be done. Action item was changed from 'Work bolt concerns with the SWG.' to 'Work with SWG to resolve concerns with compliance with NASA-STD-08307, including bolts in sloppy holes being assumed to take shear.'

Open Action Items Report

Open Item Number: AMS_02-CDR-09

RID Open Date: 5/1/2003

Title: AMS-CDR-2-15: Missing Documents - Structural Analysis

Intiator(s): Murthy Pinnamaneni Structures/Boeing

Description: The following items were not available in the Data Package: design load factors, dynamic analysis procedure and results. From 2.2.1, AMS Report Outline.doc, Magnetic Strap Analysis and the Coupled Loads Analysis, which are identified to be in "separate sections." Reports/documents that include: Dynamic Loads Analysis Description; Payload/Shuttle Interface Loads; Trunnion Deflection; Trunion Misalignment Loads; and Uncertainty Factors Used in the Analysis.

Action Item Information

Actionee(s): Chris Tutt/ESCG

Action Due Date: 7/1/2006

Action: Update stress report and dynamics analyses reports. To be completed by Phase III Safety Data Pack.

Action Status:

Open Action Items Report

Open Item Number: AMS_02-CDR-12

RID Open Date: 5/1/2003

Title: AMS-CDR-4-18: Presentation Issues

Intiator(s): H. Hoang/PEI
J. Fu/PEO

Description: The presentation for avionics is not adequate for documentation purpose to show compliance with SSP 57003 requirements.

Action Item Information

Actionee(s): Tim Urban/ESCG

Action Due Date: 3/31/2005

Action: Supply document listing EMI/electrical specs.

Action Status: 9/2/2005 - Urban has sent CR text to Boeing PEI Hoang. Review meeting is scheduled for the Tuesday, Sept. 6 (yes, 2005). After Boeing PEI concurrence, the CR will be submtted for both the Hardware / Station ICD and the PIH ICD.
8/22/2005 - Draft version of CR complete. Tim Urban attempting to get Henry Hoang's concurrence before it is released as a CR. Win Reid and Bob Miley to assist in arranging meeting.
6/29/2005 - Tim Urban/ESCG to update PIH ICD based on Henry Hoang's inputs. Update due 8/22, to be released as a CR.
2/09/2005 - Try to get initiator's approval to merge this CDR action item with AMS-CDR-4-20 (OPMT action item AMS_02-CDR-13 by next CCB. Action item due date was changed to March 31, 2005.
1/05/2005 - Paul Nemeth/LMSO to ask initiator if this RID can be rolled into RID AMS-CDR-4-18 and Open Action Item AMS_02-CDR-13.

Open Action Items Report

Open Item Number: AMS_02-CDR-13

RID Open Date: 5/1/2003

Title: AMS-CDR-4-20: Power Compatibility and EMC Testing

Initiator(s): H. Hoang/PEI
J. Fu/PEO

Description: The EME Control Plan (or equivalent) used to establish the plan for how AMS will be compatible with the ISS EMI requirements is lacking in the CDR package.

Action Item Information

Actionee(s): Tim Urban/ESCG

Action Due Date: 3/31/2005

Action: Supply EME control plan.

Action Status: 8/22/2005 - Draft version of CR complete. Tim Urban attempting to get Henry Hoang's concurrence before it is released as a CR. Win Reid and Bob Miley to assist in arranging meeting.
6/29/2005 - Tim Urban/ESCG to update PIH ICD based on Henry Hoang's inputs. Update due 8/22, to be released as a CR.
2/09/2005 - Try to get initiator's approval to merge this CDR action item with AMS-CDR-1-18 (OPMT action item AMS_02-CDR-12 by next CCB. Action item due date was changed to March 31, 2005.
1/05/2005 - Tim Urban/LMSO to provide status March 2005.

Open Action Items Report

Open Item Number: AMS_02-PDS_CDR-06

RID Open Date: 4/18/2005

Title:

Intiator(s): Tim Urban

Description:

Action Item Information

Actionee(s): M. Cova

Action Due Date: 10/15/2005

Action: Re-evaluate thermal optical properties on the top of the PDS as there are no longer heaters located there (breakdown of MLI vs. white paint). QM & FM different ?

Action Status: 11/7/2005 - QM no longer exists, so second question is now irrelevant. All further PDS activities on hold until 6 Feb 2006.
8/2/2005 - Awaiting thermal analysis of revised worst hot case.

Open Action Items Report

Open Item Number: AMS_02-PDS_CDR-08

RID Open Date: 4/18/2005

Title:

Intiator(s): Tim Urban

Description:

Action Item Information

Actionee(s): S. Alia

Action Due Date: 5/16/2005

Action: Add 0.03 μ F per 3.2.2.2.2.A of SSP 57003, and add verification by design inspection or test.

Action Status: 11/7/2005 - All further PDS activities on hold until 6 Feb 2006.
8/22/2005 - CGS proposes release of updated document by 9/19.
8/15/2005 - Tim Urban to contact Sergio Alia and resolve remaining concerns. Closure expected by 9/5.

Open Action Items Report

Open Item Number: AMS_02-PDS_CDR-09-2

RID Open Date: 4/18/2005

Title:

Intiator(s): Tim Urban

Description:

Action Item Information

Actionee(s): S. Alia

Action Due Date: 5/16/2005

Action: Update document for maximum operating temperature of 51°C (Section 3.2, requirement ID PDS-ENV-3).

Action Status: 11/7/2005 - All further PDS activities on hold until 6 Feb 2006.
8/22/2005 - CGS proposes release of updated document by 9/19.
8/2/2005 - MOT should be changed to match updated worst case hot temperature.

Open Action Items Report

Open Action Items Report

Open Item Number: AMS_02-Thermal_CDR-03

RID Open Date: 4/4/2005

Title: Design Pressures Based on Operational Temperature

Intiator(s): Chris Tutt/ESCG

Description: In each specification, the requirement states “The LHP shall be designed for an internal Maximum Operating Pressure which is equal to the vapour pressure of the working fluid at Maximum Operating Temperature.” The LHP should instead be designed to survive the Maximum Design Pressure, which will be the larger of either the pressure of the working fluid at the maximum survival temperature or, for those LHPs using ammonia as the working fluid, the maximum pressure that could occur in a trapped volume if the ammonia were to freeze and undergo local thawing.

Action Item Information

Actionee(s): M. Molina/CGS

Action Due Date: 6/15/2005

Action: Replace Maximum Operating Pressure with Maximum Design Pressure and change description of required calculations to match.

Action Status: 11/14/2005 - Analysis complete and provided to JS - under reivew by Craig Clark and Leland Hill.
11/7/2005 - Christian Vettore running analysis to show thermal gradients across radiator panels. Results expected 11/15.
10/17/2005 - Updated results to be presented at October TIM.
8/10/2005 - CGS proposed 9/30 for release of updated documents.
8/9/2005 - Craig Clark, Chris Tutt, and Leland Hill met to review analysis requirements. JS to do initial fault screening analysis based on information currently available in house. Craig to confirm with Marco Molina that we have latest data available. Analysis of certain systems (CAB, PDS, etc) on hold pending finalization of design.
8/3/2005 - Issue reviewed at TWG and MDP calculation assumptions defined for each pressure system. Maximum design temperatures provided by CGS 8/3. MDP calculations in work, but clearly heater circuits will be safety critical.

Open Action Items Report

5/25/2005 - Leland Hill working this issue with Reinhard Schlitt. MDP calculation under review.

Open Action Items Report

Open Item Number: AMS_02-Thermal_CDR-15

RID Open Date: 4/4/2005

Title: Inconsistent NAS1351 Bolt Yield Strengths

Intiator(s): Bruce Sommer/ESCG

Description: DISCREPANCY

Yield strength for NAS1351 bolts in OHB report is not the same as the yield strength for the same fastener type in the CGS report. This is consistent for all OHB v.s. CGS reports.

Bolt NAS1351

OHB Yield Allowable 950 MPa (138 ksi)

CGS Yield Allowable 827 MPa (120 ksi)

Action Item Information

Actionee(s): Marco Molina/CGS

Action Due Date: 3/31/2006

Action: *Find the documentation that verifies the yield strength of the fastener and update all reports to include the same allowable for the same bolt type.*

Action Status: *11/14/2006 - Date changed to 3/31/2006 to reflect contract negotiation status.*

11/7/2005 - Contract negotiations still ongoing. Best estimate for test date is now 1/ 2006.

8/10/2005 - CGS proposes test data would be available to SWG by ATP+2 months. The final analysis report would be available 2.5 months after written acceptance by SWG.

5/06/2005 - Updated document received and is under review.

4/25/2005 - Procurement specifications FFS86E for NAS1351 fasteners was sent to CGS and OHB on 04/25/05. Page 7 of the document shows a minimum yield strength for these bolts is 120 ksi.

Open Action Items Report

Open Item Number: AMS_02-Thermal_CDR-17

RID Open Date: 4/7/2005

Title: Insert test and its applicability to different size of insert

Intiator(s): H. C. Lo/NASA-JSC

Description: DISCREPANCY

Three inserts, with size 3 fastener and face sheet of material 2024, were tested. The requirement to test 12 more insert has been planned. The upcoming test will use 6061 material face sheet. Also, there are two types of inserts, namely size 3 and size 4. The test result based on size 3 and 2024 will be deemed applicable to size 4 and 6061. Rationale has to be provided to make this jump of application.

Action Item Information

Actionee(s): Marco Molina/CGS

Action Due Date: 6/15/2005

Action: Test result has to be presented and rationale given for the test applicability to cover size 4 insert and different face sheet material 6061. Test proposal end of April. Perform test ASAP

Action Status: 1/31/2006 - Date changed to 1/31/2006 to reflect contract negotiation status.
8/8/2005 - CGS proposes ATP+2 months as projected test date.

Open Action Items Report

Open Item Number: AMS_02-Thermal_CDR-57

RID Open Date: 4/4/2005

Title: TRDGB heaters

Intiator(s): Craig Clark/ESCG

Description: DISCREPANCY

Analysis of TRDGB heaters not provided.

SUGGESTED SOLUTION

Provide analysis for TRDGB heaters

SUPPLIER'S RESPONSE

Failure on analysis will be done by TRDGB thrmal responsible.

Action Item Information

Actionee(s): Ulrich Becker/MIT, Martina Green/MIT

Action Due Date: 6/1/2005

Action: *Finalize TRD Gas Supply tank heater design, then analyze system to determine maximum design pressure which could occur after any two faults in the safety circuit. Once that MDP is available, confirm that tank burst pressure and LBB analysis still meet requirements.*

Action Status: *11/7/2005 - Chris Tutt to review contract status with AMS-02 business office and determine likelihood of MIT work being accepted.
8/22/2005 - Actionees changed to Ulrich Becker and Martina Green.
8/15/2005 - Trent Martin, Paul Nemeth, and Craig Clark to meet with Ulrich Becker and discuss analysis plan.
8/3/2005 - Craig Clark to get contract status from Ulrich Becker to quell disquieting rumors.
5/19/05 - Analysis is on hold pending signed contract between JS and ETH/MIT.*

Open Action Items Report

Open Item Number: AMS_02-Thermal_CDR-60

RID Open Date: 4/4/2005

Title: Crate radiator heaters

Intiator(s): Craig Clark/ESCG

Description: DISCREPANCY:
Crate radiator heaters are not defined.

SUGGESTED SOLUTION
Provide details for crate radiator heaters.

Action Item Information

Actionee(s): Christian Vettore/CGS

Action Due Date: 8/15/2005

Action: Provide PDS heater design allowing box to warmed to switch-on temperature with only one power feed at arm voltage levels.

Action Status: 11/7/2005 - Detailed analysis shows that PDS can survive with only 16.7A coming from the arm. Final decision on heater design to be made by 11/10.
8/22/2005 - Tim Urban to contact Russ Long and get appropriate technical point of contact at MDR.
8/10/2005 - CGS proposes 9/30 as release date for updated heater documents.
8/8/2005 - Bob Miley/OZ to identify technical POC for 1800W requirement.
5/27/2005 - Heater details provided, but warming the PDS was found to require both A&B power feeds. Only one feed will be available while on the arm. CGS to work issue.

Open Action Items Report

Open Item Number: AMS_02-Thermal_CDR-68

RID Open Date: 4/4/2005

Title: TRD Attitudes

Intiator(s): Craig Clark/ESCG

Description: TRD was only analyzed in 2 ISS attitudes, both at $\beta = +75^\circ$. This is not enough to determine if all requirements are met.

Action Item Information

Actionee(s): R. Schlitt/OHB, C. Clark/ESCG

Action Due Date: 1/15/2006

Action: Analyze TRD for the entire range of ISS attitudes and beta angles. Also all STS free flying, docked on ISS, and handoff cases.

Action Status: 11/7/2005 - OHB proposes 12/7 for start of updated analysis report. ECD 1/15 2006. Date changed to match.
8/15/2005 - New thermal cases identified and provided to CGS. CGS gathering thermal data at TRD interfaces and providing that information to OHB. OHB will then update their analysis using new temperature data. CGS expects to deliver interface data by 9/5, OHB tentatively expected to deliver new results on 9/22.
8/3/2005 - Initial TRD results presented at TWG look promising, but some model refinements were identified.
6/5/1005 - TRD thermal model to be increased to 15 nodes. Still to be verified whether 15 nodes will be sufficient.
5/19/2005 - OHB will perform analyses considering all attitudes and transients. This will be done after a TVT test and subsequent TRD model update.

Open Action Items Report

Open Item Number: AMS_02-Thermal_CDR-82

RID Open Date: 4/4/2005

Title: CAB Heater Schematic

Intiator(s): Mike Capell/AMS

Description: DISCREPANCY

Looking at Fig 4-2, pg 20, I see that the thermostats for the CAB are both placed on the return line from the heaters. Is there a reason for this ? Usually we have been placing the first one on the return line and the second one on the input line because we understood this was the "normal practice". I don't think it makes much difference - but we should stick to one way or the other, no ?

SUGGESTED SOLUTION

Need comments

SUPPLIER'S RESPONSE

Will be fixed

Action Item Information

Actionee(s): Marco Molina/CGS

Action Due Date: 12/1/2005

Action: Figure needs to be fixed.

Action Status: 11/14/2005 - Date changed to match ECD.

11/7/2005 - ECD for new heater document is 12/1.

8/10/2005 - CGS proposes completion of CAB design + 1 month for formal release date of updated heater doucment. This would currently correspond to 10/15.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-02

RID Open Date: 4/4/2005

Title: Thermal bars frequency analysis

Intiator(s): H. C. Lo/NASA-JSC

Description: DISCREPANCY:

1. There is no figure 11, as mentioned.
2. When TPG material is neglected, the first mode shown is to be 80 hz which is close to a test result of 84 hz. However, when the TPG material is not neglected, the comparable analytical mode (second mode at 152 hz) is much higher than the test result.

SUGGESTED SOLUTION:

Explanation of the discrepancy.

Action Item Information

Actionee(s): Eric Perrin/Uni-Ge

Action Due Date: 7/15/2005

Action: NLR to provide explanation of the discrepancy and/or update document.

Action Status: 11/7/2005 - Actionee changed to Eric Perrin.

11/4/2005 - Thermal bars part of the tracker system, not the TTCS, and have been included in the tracker FEM. Originator asked to withdraw RID.

9/9/2005 - Bart Verlaat/NIKHEF to provide detailed drawings of surrounding structure to APO. Typo to be corrected in next release of document.

8/15/2005 - Bruce Sommer to contact Divac Rapin and try to work the issue through the Tracker group instead of the TTCS group.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-03

RID Open Date: 4/4/2005

Title: Evaporator tail need a redesign

Intiator(s): H. C. Lo/NASA-JSC

Description: DISCREPANCY:

1. At the time of this delta CDR, section 6 still indicates a need for evaporator tail redesign due to large deformation. The large deformation is caused by evacuated vacuum case before launch.

SUGGESTED SOLUTION:

Need to present the evaporator tail redesign as soon as possible.

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 7/15/2005

Action: NLR to provide evaporator redesign details.

Action Status: 11/7/2005 - Johannes to send details to Bruce Sommer for review.
9/9/2005 - New design to be presented at CDR.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-05

RID Open Date: 4/4/2005

Title: Incorrect Figure Title

Intiator(s): H. C. Lo/NASA-JSC

Description: DISCREPANCY:

Figure 15 is mention in section 6. But there is no figure 15.

SUGGESTED SOLUTION:

Correct the typo.

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 2/6/2006

Action: NLR to correct typos in next release of document.

Action Status: 11/28/2005 - Based on new NIKHEF contract, due date changed to 2/6/2006.

11/14/2006 - Date changed to 1/3 to better reflect analyst workloads.

9/9/2005 - Typo will be corrected in next release of document.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-06

RID Open Date: 4/4/2005

Title: Installation deformation release

Intiator(s): H. C. Lo/NASA-JSC

Description: DISCREPANCY:

1. It is not clear how the assembly induced deformation is released after assembly. In one instance, it indicates that the 2mm deformation will be released. And in the other instance, it indicates that the 10 mm deformation is not acceptable and requires a evaporator tail redesign.
2. It is not clear how to measure the induced installation deformation. Or is there such a procedure to measure the installation deformation.

SUGGESTED SOLUTION:

1. Clarification required.
2. Implement a procedure to measure the installation deformation and set a range of acceptable installation deformation.

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 7/15/2005

Action: NLR to clarify requirement and provide detail on how deformation will be measured.

Action Status: 11/14/2005 - Chris Tutt to contact Roberto Battiston and determine appropriate actionee.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-07

RID Open Date: 4/4/2005

Title: Visual inspection of the weld and fracture analysis

Intiator(s): H. C. Lo/NASA-JSC

Description: DISCREPANCY:

1. Since visual inspection will be the inspection method for post-test verification, when perform fracture analysis, the minimum crack size has to be conforming to the inspection method.
2. Is there a structural analysis performed on the welds, including fracture analysis, as required?
3. Welding is performed at room temperature. During operation, the weld will be at a much lower temperature. How do we guarantee that the weld will be performing at a much lower temperature, possibly due to residual stress?

SUGGESTED SOLUTION:

Present strength and fracture analysis.

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 7/15/2005

Action: NLR to provide strength and fracture analysis

Action Status: 11/28/2005 - Data received at JS and is under review.

11/14/2005 - Weld procedure is available and has been sent to Dan Rybicki/ESCG for review. Johannes Van Es/NLR to supply all documentation to Bruce Sommer by 11/18 for additional review.

9/9/2005 - Weld structural and fracture analysis to be presented at TTCS CDR. NLR to coordinate requirements with Dan Rybicki.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-08

RID Open Date: 4/4/2005

Title: Leak integrity test still TBD

Intiator(s): H. C. Lo/NASA-JSC

Description: DISCREPANCY:
Leak Integrity test still is listed as TBD.

SUGGESTED SOLUTION:
Establish leak integrity test procedure as soon as possible.

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 7/15/2005

Action: NLR to provide leak integrity test procedure

Action Status: 11/14/2005 - Procedure will be sent to Bruce Sommer/ESCG by 11/15.
9/9/2005 - Leak integrity test procedure to be presented at CDR.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-09

RID Open Date: 4/4/2005

Title: TTCS tube routing

Intiator(s): H. C. Lo/NASA-JSC

Description: DISCREPANCY:

TTCS tube routing goes along the strut into Ram and Wake radiator. Since RAM and WAKE radiator is a much flexible structure, thus it is subjected to a large deformation and deflection. How the TTCS tube routing is attached to the strut is not clear. How the TTCS tube is attached to the strut and how it is routed into the radiator can affect the stress in the tube.

SUGGESTED SOLUTION:

Present detail information about the TTCS tube routing into RAM and WAKE radiator for review.

Action Item Information

Actionee(s): Antonio Alvino/INFN, Bart Verlaet/NIKHEF

Action Due Date: 7/15/2005

Action: NLR to provide details of TTCS tube routing

Action Status: 11/7/2005 - Preliminary work done by INFN. NLR working small contract with NIKHEF to get Bart Verlaet back on task.

9/9/2005 - Tube routing details to be presented at TTCS CDR.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-10

RID Open Date: 4/4/2005

Title: Negative safety margin

Intiator(s): H. C. Lo/NASA-JSC

Description: DISCREPANCY:

Negative safety margins are shown in the analysis. Though the analysis is stated as rough analysis since detail information on components at this time is still not available, suggested remedy was not presented. Or different analysis approach is not attempted.

SUGGESTED SOLUTION:

Since this is a delta CDR, remedy for negative safety margin should be provided. The remedy can be re-design of the base plate/fasteners. Or the analysis can be re-done with different approach to show a positive safety margin. Leaving negative safety margin as presented is not desirable.

Action Item Information

Actionee(s): Corrado Gargiulo/INFN, Xinmei Qi/SYSU

Action Due Date: 7/15/2005

Action: NLR to provide remedy for any negative margins of safety presented at PDR.

Action Status: 11/14/2005 - Updated analysis will be presented at TWG meeting in Milano.
9/9/2005 - Updated analysis will be presented at TTCS CDR.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-11

RID Open Date: 4/4/2005

Title: Bolt and insert analysis

Intiator(s): H. C. Lo/NASA-JSC

Description: DISCREPANCY:

1. how the bolt analysis is done is not presented in the subject document.
2. bolt and insert technical information is not presented in the document.
3. it is not clear that pre-load is considered in the bolt in the analysis.

SUGGESTED SOLUTION:

Provide information and specification on bolts and inserts used.

Provide bolt and insert detail analysis, including applicable document for bolt analysis and demonstrate that bolt analysis is compliant with the applicable document.

Action Item Information

Actionee(s): Corrado Gargiulo/INFN, Xinmei Qi/SYSU

Action Due Date: 7/15/2005

Action: NLR to provide bolt details and analysis for TTCS box.

Action Status: 11/14/2005 - Updated analysis will be presented at TWG meeting in Milano.
9/9/2005 - Details to be provided at TTCS CDR.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-12

RID Open Date: 4/4/2005

Title: Finite element analysis approach and fastener analysis

Intiator(s): H. C. Lo/NASA-JSC

Description: DISCREPANCY:

1. "All box masses (including inside components) are modelled as uniformly distributed over the baseplate top face..." The box itself is not connected to the base plate. And the box has its own fastening point with USS. This assumption can be in error.
2. components/baseplate interface are connected with fasteners. It appears that there is no information on these. As such, no analysis on these fasteners.
3. No analysis provided on components within TTCB.

SUGGESTED SOLUTION:

Provide information when available.

Re-do analysis as appropriate.

The components inside TTCB has to be defined as soon as possible.

Action Item Information

Actionee(s): Corrado Gargiulo/INFN, Xinmei Qi/SYSU

Action Due Date: 7/15/2005

Action: NLR to provide design detail and finite element analysis of TTCB components.

Action Status: 11/14/2005 - Updated analysis will be presented at TWG meeting in Milano.
9/8/2005 - Analysis to be provided at TTCS CDR.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-14

RID Open Date: 4/4/2005

Title: TTCS fluid

Intiator(s): Klaus Luebelsmeyer

Description: DISCREPANCY:

Using CO2 puts severe issues about freezing

SUGGESTED SOLUTION:

Investigate impact of using alternative fluids with lower melting point, like propylene.

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 7/15/2005

Action: NLR to investigate alternatives to CO2 to avoid freezing.

Action Status: 11/7/2005 - CAST still pushing for alternatives to CO2. CAST will make presentation at Milano describing their proposal.

8/8/2005 - N2O has been identified as possible alternative - it has a much lower freezing point but has worse performance. Final decision on fluid on hold pending resolution of various design and analysis issues.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-19

RID Open Date: 4/4/2005

Title: TTCrate location

Intiator(s): Mike Capell/AMS

Description: DISCREPANCY:

Ref Fig 3-8, pg 16, TTCE location is shown incorrectly. It is on the bottom crate row. See attached CGS dwg. Of course I call it the TT-Crate. Of course the TTPD is still in the location indicated,

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 7/15/2005

Action: NLR to update document as suggested in next release

Action Status: 11/14/2005 - Document to be released in time to support TWG meeting in Milano.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-20

RID Open Date: 4/4/2005

Title: Modes Missing

Intiator(s): Mike Capell/AMS

Description: DISCREPANCY:

Usually a document like this contains a table summarizing the first N modes (their frequency and effective mass).

It is not noted that this is being/has been performed, just a few pictures (Fig 17,18,19) are included without reference.

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 7/15/2005

Action: NLR to provide more details in the structural analysis report.

Action Status: 11/14/2005 - Document to be released in time to support TWG meeting in Milano.
11/7/2005 - NLR proposes 12/1 for document release date.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-23

RID Open Date: 4/4/2005

Title: Missing Analysis

Intiator(s): Craig Clark/ESCG

Description: DISCREPANCY:
No analysis results were provided for Tracker or TTCS

SUGGESTED SOLUTION:
Provide analysis results

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 7/31/2005

Action: NLR to provide temperature results for Tracker internals and TTCS system.

Action Status: 11/14/2005 - Date changed to 12/8 to better reflect analyst workload.
11/10/2005 - Thermal model being run now. Model documentation to be provided by SYSU by 11/11.
NLR proposes 12/1 for release of analysis document.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-25

RID Open Date: 4/4/2005

Title: TTCS Heater Controls

Intiator(s): Craig Clark/ESCG

Description: DISCREPANCY:

TTCS heater controls and interlocks are not well defined. Heaters that are not two-fault tolerant need to be shown by analysis not to cause a safety problem.

Start-up heaters on tubing currently have no thermostats.

SUGGESTED SOLUTION:

Provide details for TTCS heater control (computer control, thermostats, etc). Show that all heaters are two-fault tolerant or show by analysis that a failed on heater will not cause a safety problem.

Action Item Information

Actionee(s): Johannes Van Es/NLR

Action Due Date: 6/30/2005

Action: NLR to provide details of Line heaters, including interlocks and failure analysis.

Action Status: 11/14/2005 - Results to be presented at TWG Meeting in Milano.

11/10/2005 - NLR failure analysis complete except for condensers. Results to be presented at TWG meeting in Milano.

8/3/2005 - Heaters will clearly be safety critical, so Craig Clark and Leland Hill to define required safety verifications.

Open Action Items Report

Open Item Number: AMS_02-TTCS_PDR-26-1

RID Open Date: 4/4/2005

Title: TTCS Manifold Attachment

Intiator(s): Craig Clark/ESCG

Description: DISCREPANCY:

The Upper Vacuum Case Joints may not be suitable for mounting the TTCS manifolds due to undesirable temperature extremes. This is critical to avoid CO2 freezing in the manifolds.

SUGGESTED SOLUTION:

Results of integrated thermal analysis need to be reviewed and a suitable mounting location identified.

Action Item Information

Actionee(s): Johannes Van Es/NLR
Marco Molina/CGS

Action Due Date: 6/15/2005

Action: NLR to work with CGS and NASA/ESCG to identify possible locations for mounting TTCS manifolds.

Action Status: 11/14/2005 - Proposal to be presented at TWG meeting in Milano.

11/10/2005 - Manifolds will be mounted to the VC joints. Transport tubes still need to be assessed for freezing. Craig Clark to review analysis assumptions and propose a less conservative analysis plan.

8/15/2005 - Bala doing fracture analysis on manifold pipes. Bala, Leland, Craig, and Chris to meet with both fracture and pressure systems team on PSRP and review proposed plan.

8/3/2005 - Preliminary thermal analysis shows that proposed manifold locations are marginal at best. Reviews of the rest of the structure for other locations are underway, but it is not clear that any location exists that will meet freezing requirements. Craig Clark to arrange meeting with safety community and discuss options.

Open Action Items Report

Open Item Number: *UPS-CDR-04*

RID Open Date:

Title:

Intiator(s):

Description:

Action Item Information

Actionee(s): *Tim Urban/ESCG*

Action Due Date: *1/3/2006*

Action: *Provide BMS qualification test report.*

Action Status: *11/15/2005 - Date changed to 1/3 to better reflect Yardney's process.
9/2/2005 - Due to resistor problem on BMS boards, the delivery of BMS qualification test report may be delayed 3 ~ 12 weeks. Yardney is continuing to keep Tim Urban informed.*